



BioFuels Atlas



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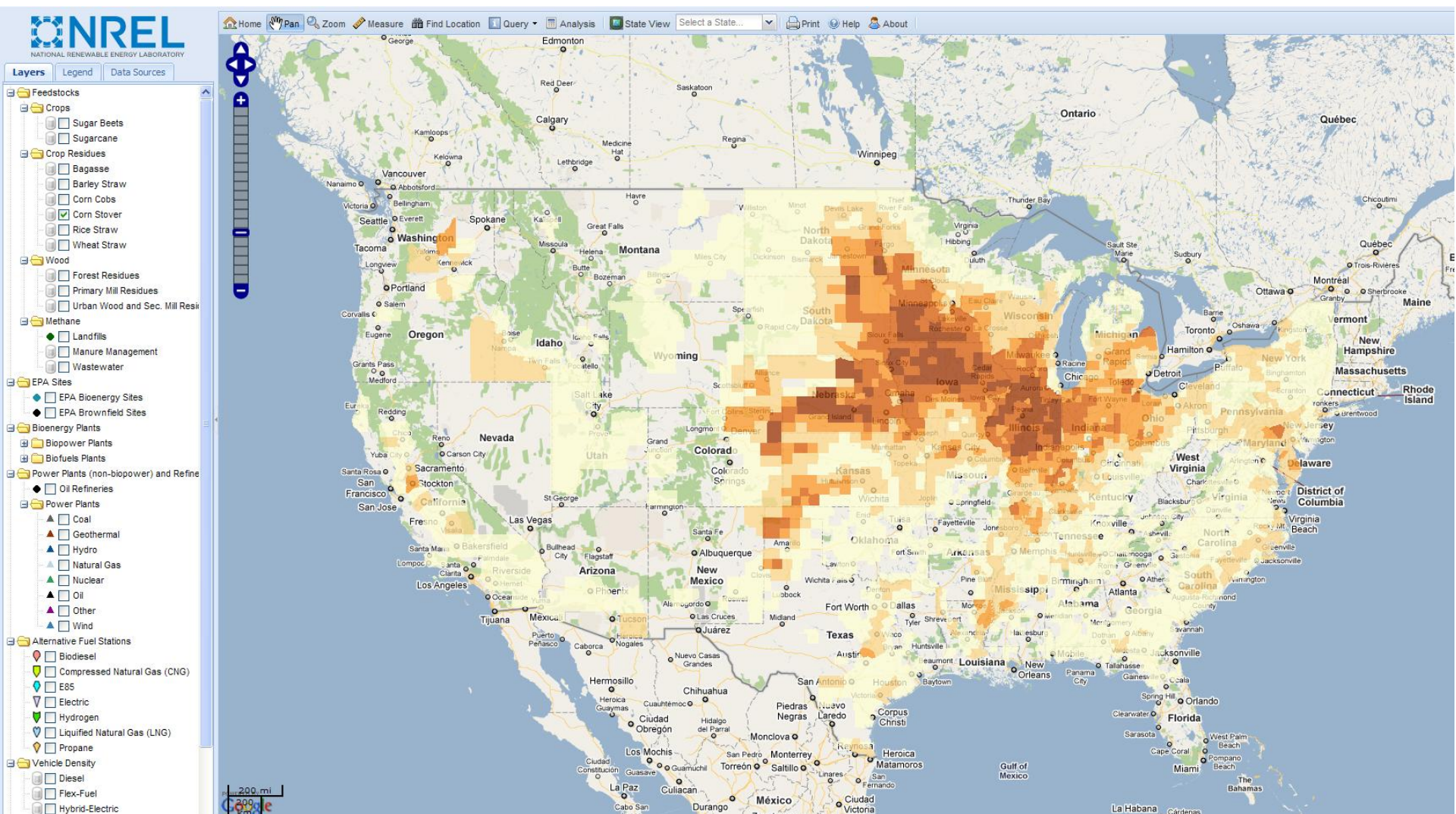
Introduction

- **BioFuels Atlas is a first-pass visualization tool that allows users to explore the potential of biomass-to-biofuels conversions at different locations and scales**
- **Tool highlights areas for biofuels production and infrastructure deployment**
- **Launched September 2010**
- **Over 10,500 site visits since launch**
- **Funded by DOE Biomass Program**

Approach

- **Web-based platform**
 - OpenCarto-NREL developed this platform for multiple geospatial tools of shared code, updates, maintenance, and consistent functionality
 - Seven tools share the platform reducing development, maintenance, and updating costs (a potential 7:1 return for every dollar invested)
- **Data Layers**
 - Consistent and reliable data sources: DOE, EPA, USDA
 - Crop residues, methane, secondary mill and urban residues were calculated based on logical assumptions and methodologies
- **Analysis**
 - Biofuels potential based on user selected feedstocks and collection radius
 - Calculation based on feedstock chemistry (EERE Biomass Composition and Property Database) and yield (70% of EERE Theoretical Ethanol Yield Calculator)
 - User can change inputs and recalculate potential biofuels yields
- **State Summary View & Tables**-Traditional & Bioenergy data included

Screen Shots-Initial Screen



Query Functionality

Regional Query-blue highlights counties in region selected

Tabs for each data layer queried

Detailed data for each data layer; including infrastructure info; can download to excel

Site Name	City	State	Mapped Acreage	Dist to Powerlines	Distance to Highways	Distance to Rail	Latitude	Longitude
PHELPS DODGE CORP NEW CORNELIA BRANCH	AJO	AZ	1,800.00	0.84	0.00	1.10	32.3800000000000	-111.161000000000
Usaf Davis Monthan Air Force Base	Davis Monthan	AZ	10,763.00	0.00	0.00	0.00	32.1640020000000	-110.838997000000
Tangerine Road MSW Landfill	Marana	AZ	52.00	2.38	0.79	0.88	32.4194450000000	-111.183334000000
Harrison City Landfill	Tucson	AZ	70.00	0.48	0.00	1.93	32.1627000000000	-110.790200000000
Los Reales Landfill	Tucson	AZ	375.00	0.33	0.00	0.00	32.2140000000000	-110.969800000000
TUCSON INTERNATIONAL AIRPORT AREA	TUCSON	AZ	1,902.00	0.17	0.00	0.00	32.1055600000000	-110.933300000000

Analysis Functionality

The screenshot shows the NREL Bioenergy Resource Analysis tool interface. On the left, a legend titled "Feedstocks - Crop Residues - Corn Stover (tonnes/yr)" lists five categories with checkboxes: 1 to 10,000, 10,000 to 50,000, 50,000 to 100,000, 100,000 to 200,000, and Greater Than 200,000. A "Select Layers" dialog box is open, showing a list of available layers with checkboxes: Bagasse, Barley Straw, Forest Residues (checked), Urban Wood and Sec. Mill Residues, Primary Mill Residues, Corn Cobs, Corn Stover (checked), Rice Straw, Sugar Beets, Sugarcane, and Wheat Straw. Below this, a "Buffer Distance" section has a "Distance (miles)" input field set to 30 and a "Run" button. A large green circular area is overlaid on the map, representing the analysis radius. On the right, two "Bioenergy Resource Analysis Results" windows are shown. The top window has tabs for "Forest Residues", "Corn Stover", and "Summary". The "Summary" tab is active, displaying a table of results. The bottom window has tabs for "Forest Residues", "Corn Stover", and "Summary". The "Forest Residues" tab is active, displaying "Conversion Inputs" and "Outputs".

Potential biofuels production from selected feedstocks

Residue Type	Dry Amount	Gallons
Forest Residues	809,775.00	25,467,423.75
Corn Stover	372,126.00	16,224,680.08
Totals	1,181,900.69	41,692,103.83

User selects feedstocks for analysis

User enter radius

Input assumptions; user can change and re-calculate

Conversion Inputs	
Available resource (tonnes/year):	809,775.00
Expected Biofuel Yield (gallons/tonne):	62.90
% of Resource Obtainable:	50

Calculate

Outputs	
Potential Biofuel Production (gallons):	25,467,423.75

Tool sums each feedstock total for each county in radius

State View-Functionality

The screenshot displays the NREL State View interface for Nebraska. The map shows various regions highlighted in yellow and orange, with several bioenergy sites marked by colored dots. The left sidebar contains a legend with the following layers:

- EPA Sites - EPA Bioenergy Sites**
 - Bioenergy Site
- Bioenergy Plants - Biofuels Plants - Biodiesel Plants (mgal/yr)**
 - Less Than 50
 - Between 50 and 100
 - Between 100 and 150
 - Between 150 and 200
 - Greater Than 200
- Bioenergy Plants - Biofuels Plants - Ethanol Plants (producing) (mgal/yr)**
 - Less Than 50
 - Between 50 and 100
 - Between 100 and 150
 - Between 150 and 200
 - Greater than 200
- Alternative Fuel Stations - E85**
 - Existing E85 Stations
 - Planned E85 Stations
- Vehicle Density - Flex-Fuel**
 - > 139 vehicles/5 sq miles
 - 91 - 139 vehicles/5 sq miles
 - 45.5 - 91 vehicles/5 sq miles
 - 5 - 45.5 vehicles/5 sq miles

At the bottom of the interface, there are three data tables:

Fossil Fuel	
Potential Petroleum Transportation Use Replaced by Biofuels	129%
Gasoline (million gallons/year)	837
Diesel (million gallons/year)	389
Electricity (thousand MWh/year)	28,811
Natural Gas (million cubic feet)	157,265
Number of Power Plants	83

Bioenergy Production & Infrastructure	
Biodiesel Stations	3
E85 Stations	59
Ethanol Plants	26
Total Ethanol Capacity (million gallons/year)	1,557
Biodiesel Plants	1

Feedstocks		
Feedstock	Tonnes/yr	Potential Ethanol gallons/year
Bagasse	0	0
Barley Straw	0	0
Corn Cobs	1,441,645	121,096,166
Corn Stover	9,610,966	838,076,193

Download state tables and data sources

Summary of state fossil fuel use & infrastructure

Summary of state bioenergy production, use & infrastructure

Summary totals for each feedstock and biofuels potential